NIEHS Institutional Training Grant Summary Report (2001–2015)

The National Institute of Environmental Health Sciences (NIEHS) supports a diverse range of training programs to support the environmental health science workforce. A core foundation for these efforts is the Ruth L. Kirschstein National Research Service Award (NRSA) Institutional Training Grant Program, often referred to as the T32 program. This report summarizes the outcomes of trainees supported through the program between 2001-2015.

NIEHS T32 Program Overview

The goal of the Institutional Training Grant Program is to prepare qualified trainees for careers that have a significant impact on the health-related research needs of the nation. A T32 grant enables colleges, universities, and other research-based institutions to recruit and select individuals for predoctoral and postdoctoral research training.

Why Track Trainees?

Training is a critical component of NIEHS strategic plan Theme 3: Enhancing Environmental Health Science Through Stewardship and Support. T32 grantees track their trainees for 15 years after the first appointment to better assess trainee outcomes and impacts during and after their training.

NIEHS leads this innovative trainee outcome tracking project with other National Institutes of Health (NIH) partners through the use of CareerTrac.

Scope of This Report

This report summarizes data entered by T32 principal investigators (PIs) into the CareerTrac database. A major CareerTrac data collection effort was completed in 2016, so the statistics reported here range from 2001 to 2015. The hope is that the data presented here inspires T32 PIs to continue adding data to CareerTrac.

The Program by the Numbers

Trained:
  6,498 Trainees
  • **4,233** Predoctoral
  • **2,265** Postdoctoral
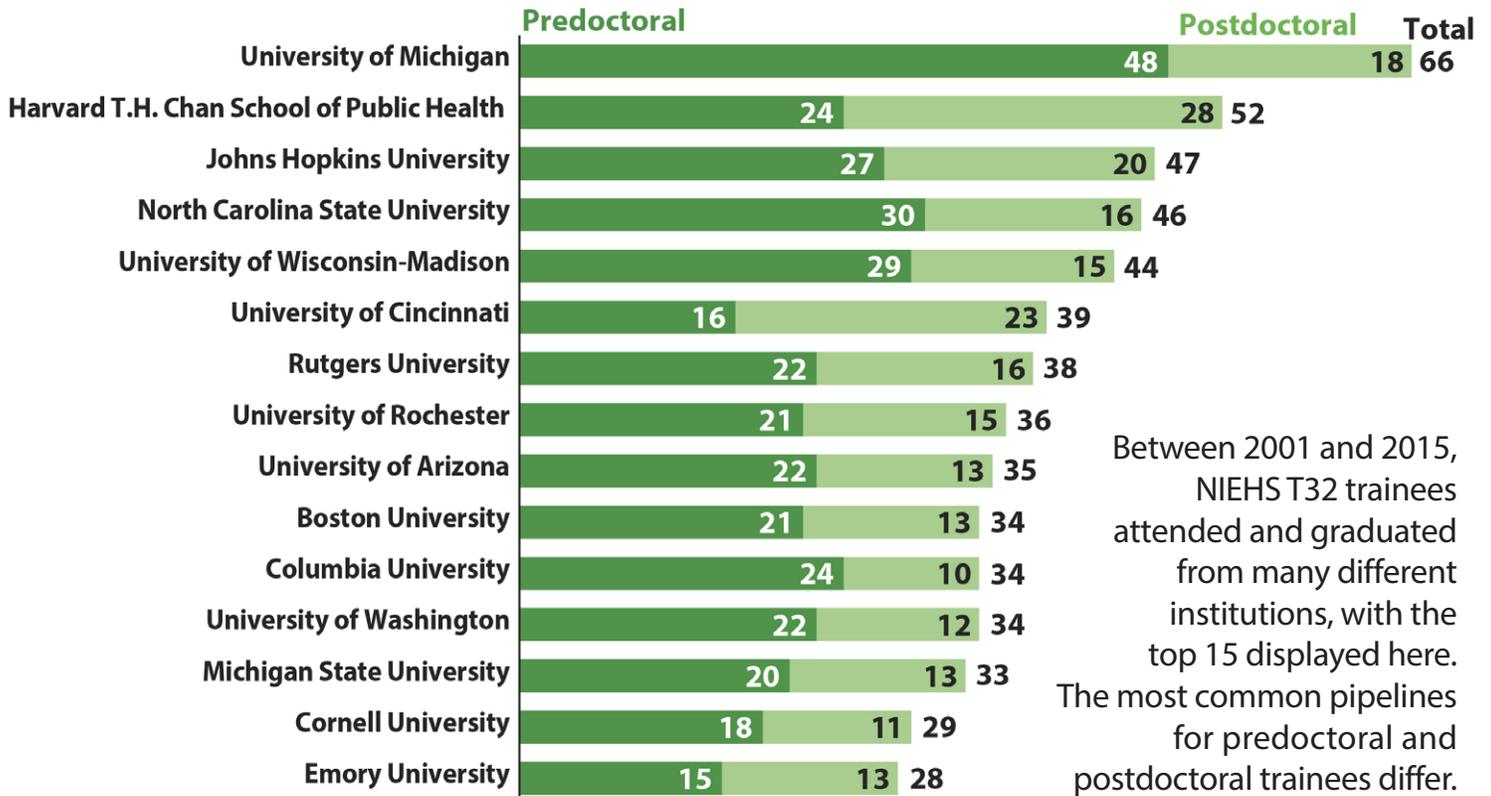
Supported:
  92 Grants

Occurred in:
  65 Institutions
  20 States

Average number of years an NIEHS T32 grant is funded:
  24.5 Years

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NIEHS T32 Trainee Background: 2001–2015

Between 2001 and 2015, NIEHS T32 trainees attended and graduated from many different institutions, with the top 15 displayed here. The most common pipelines for predoctoral and postdoctoral trainees differ.

Predoctoral / **Postdoctoral** / **Total**

| Institution	Predoctoral	Postdoctoral	Total
University of Michigan	48	18	66
Harvard T.H. Chan School of Public Health	24	28	52
Johns Hopkins University	27	20	47
North Carolina State University	30	16	46
University of Wisconsin-Madison	29	15	44
University of Cincinnati	16	23	39
Rutgers University	22	16	38
University of Rochester	21	15	36
University of Arizona	22	13	35
Boston University	21	13	34
Columbia University	24	10	34
University of Washington	22	12	34
Michigan State University	20	13	33
Cornell University	18	11	29
Emory University	15	13	28

NIEHS T32 Trainees: 2001–2015

From 2001 to 2015, the NIEHS T32 program has supported an average of:

- 122 new predoctoral trainees per year
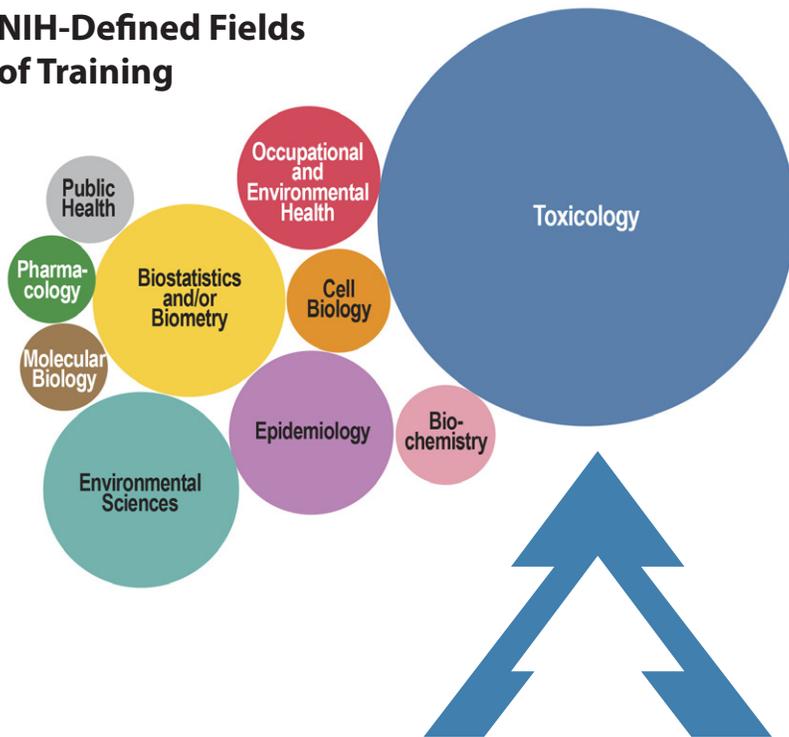- 59 new postdoctoral trainees per year

Number of Trainees, 2001–2015

- Predoctoral: 1,873
- Postdoctoral: 914
- Total: 2,787

NIEHS Supports Approximately 365 to 475 Trainees Each Year Through the T32 Program

Legend: Postdoctoral, Predoctoral
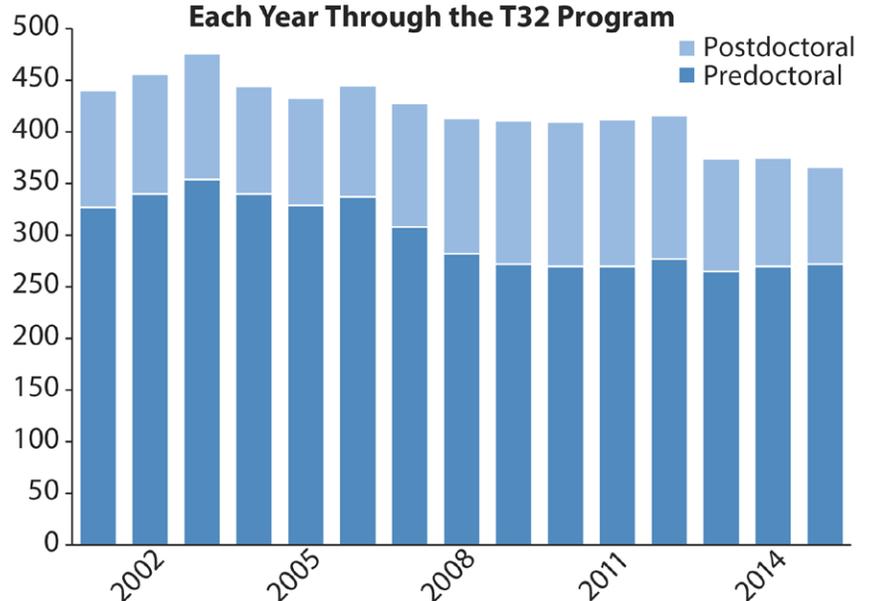
Trainee Disciplines

The 10 Most Selected NIH-Defined Fields of Training

## Broad NIH-Defined Fields of Training

NIH defines about 80 major fields of training to cover all topics supported across all 27 Institutes and Centers. Toxicology is by far the most dominant field of training for NIEHS T32 trainees, representing 32 to 49 percent of NIH-selected fields each year between 2001 and 2015. Other fields of study rise and fall over time. On average, 75 percent of trainees are captured by just 10 of the 80 NIH major fields of training.

Detailed CareerTrac-Defined Scientific and Technical Emphases

In addition to the NIH-defined fields of training, CareerTrac collects up to six scientific and technical emphases per trainee. These are tailored to environmental health science topics and allow for a much more detailed understanding of topics being addressed.

The figure to the left shows that trainees who selected toxicology as their NIH field of training are actually studying a wide range of topics, approaches, and outcomes.

Greater detail and specificity to environmental health science also enables training program staff to track emerging science topics, such as data science or the microbiome.
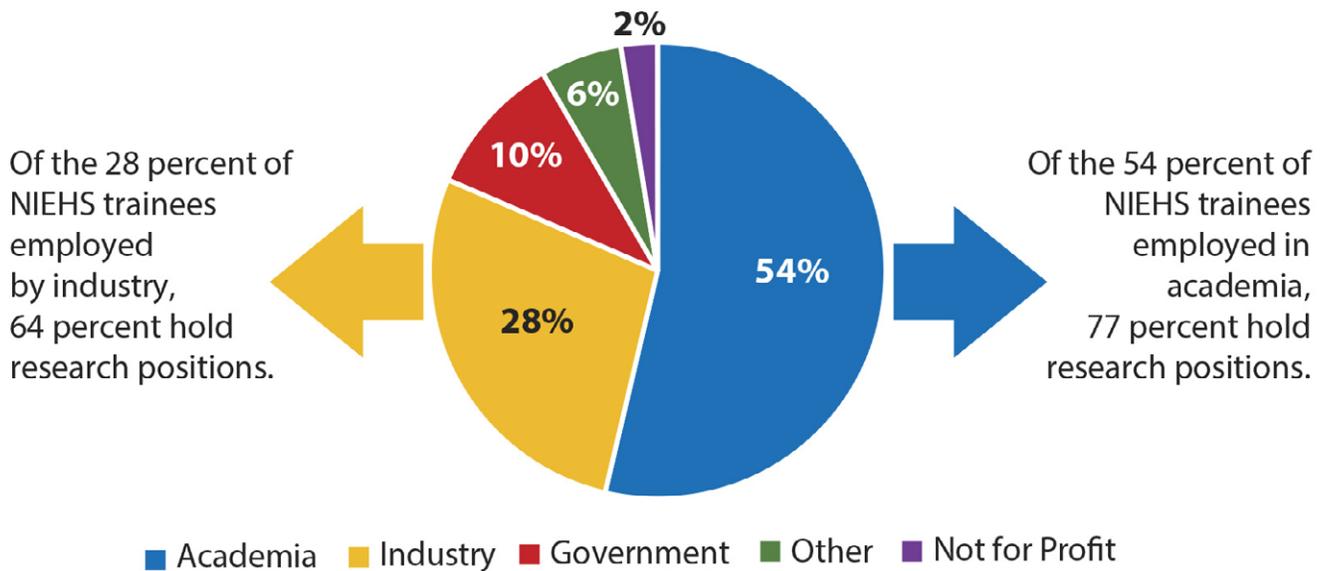
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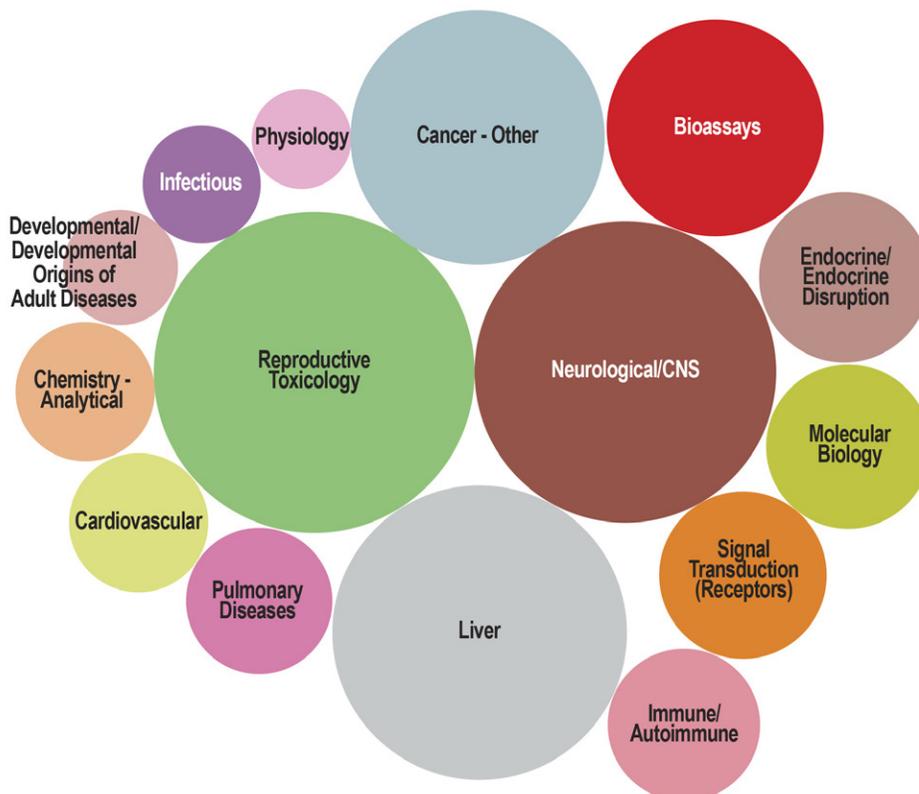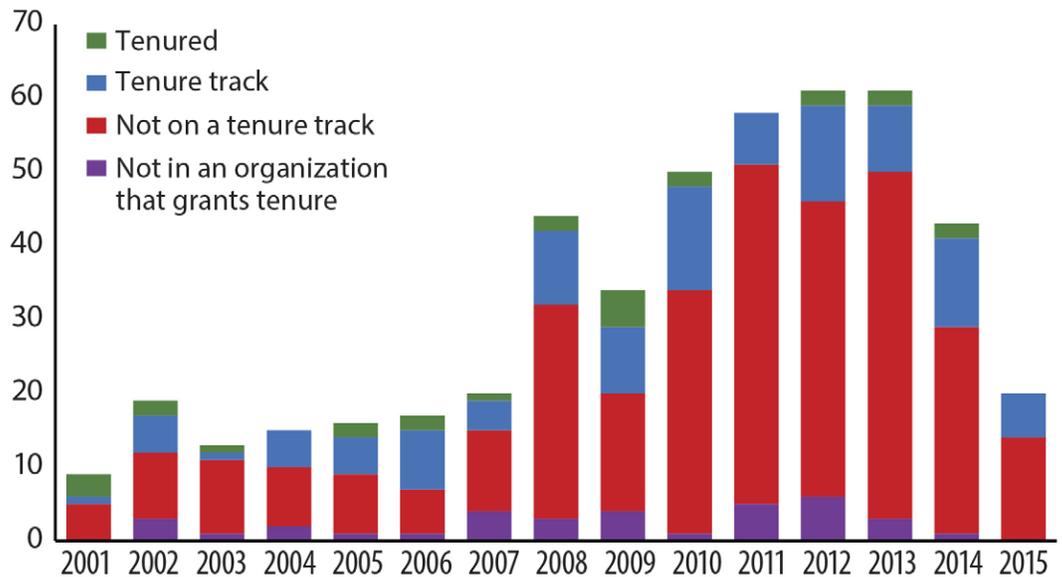
After Training: Employment

Trainees obtain jobs in all different employment sectors and emphases, though most trainees are employed in academia and industry, with an emphasis on research.*

CareerTrac is the only system that collects detailed employment data.

Careers in Academia and Industry Dominate the Employment Sector for T32 Trainees

Of the 28 percent of NIEHS trainees employed by industry, 64 percent hold research positions.

Of the 54 percent of NIEHS trainees employed in academia, 77 percent hold research positions.

2%
6%
10%
54%
28%

■ Academia ■ Industry ■ Government ■ Other ■ Not for Profit

The proportion of academic jobs reported with tenure or as tenure track has decreased, while the proportion of academic jobs not on a tenure track has increased.

■ Tenured
■ Tenure track
■ Not on a tenure track
■ Not in an organization that grants tenure

2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015

NOTE: Data on this page are from approximately 50% of the trainees (1,373 out of 2,787) supported by an NIEHS T32 grant between 2001 and 2015.

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Connections

Opportunities Prior to the T32 Program

T32 trainees have experiences with other NIH training and fellowship programs prior to entering the T32 program, such as the R25 Summer Research Experience and R25 Undergraduate Research programs.

Goals of the R25 program include:

- Helping attract young students to careers in science.
- Providing opportunities for undergraduate students to gain valuable research experience.
- Helping prepare participants for graduate school.

Opportunities After the T32 Program

ONES (Outstanding New Environmental Scientist) Award:

ONES Awards are early-stage career grants awarded to scientists, often tenured faculty, conducting cutting-edge research on the health effects resulting from exposure to environmental contaminants, such as arsenic, air pollution, industrial chemicals, and pesticides.

Alumni of the T32 Program Apply for NIH Grants and Receive Awards From Many NIH Institutes

Several R25 programs are located at universities with T32 programs.
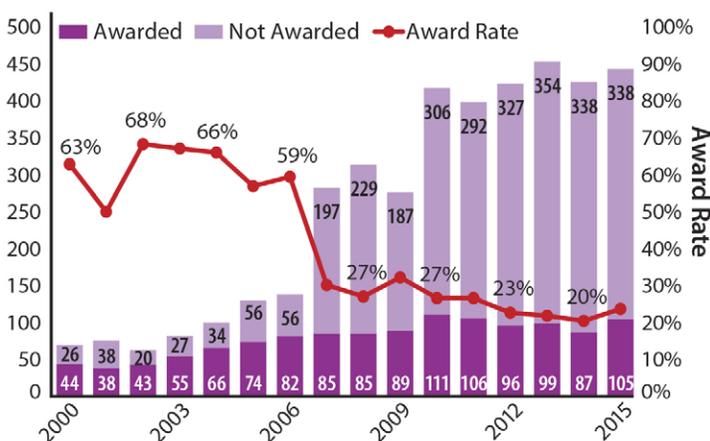
ONES Awardees

Total number of awardees: **63**

18 (29 percent) were T32 trainees

Average number of years from first T32 appointment to ONES Award: **9.5** years

Institutes Funding Grants Awarded to T32 Alumni 2000-2015

Institute	Grants
National Institute of Environmental Health Sciences	482
National Cancer Institute	254
National Institute of General Medical Sciences	140
National Heart, Lung, and Blood Institute	123
National Institute of Diabetes and Digestive and Kidney Diseases	105
National Institute of Allergy and Infectious Diseases	62
National Institute of Neurological Disorders and Stroke	60
Eunice Kennedy Shriver National Institute of Child Health and Human Development	54
National Institute on Aging	49
Division of Occupational Health and Safety	49
National Institute on Alcohol Abuse and Alcoholism	33
National Institute on Drug Abuse	33
National Center for Research Resources	26
National Institute of Arthritis and Musculoskeletal and Skin Diseases	23
National Institute of Mental Health	21

Award Status of Applications Submitted 2000-2015
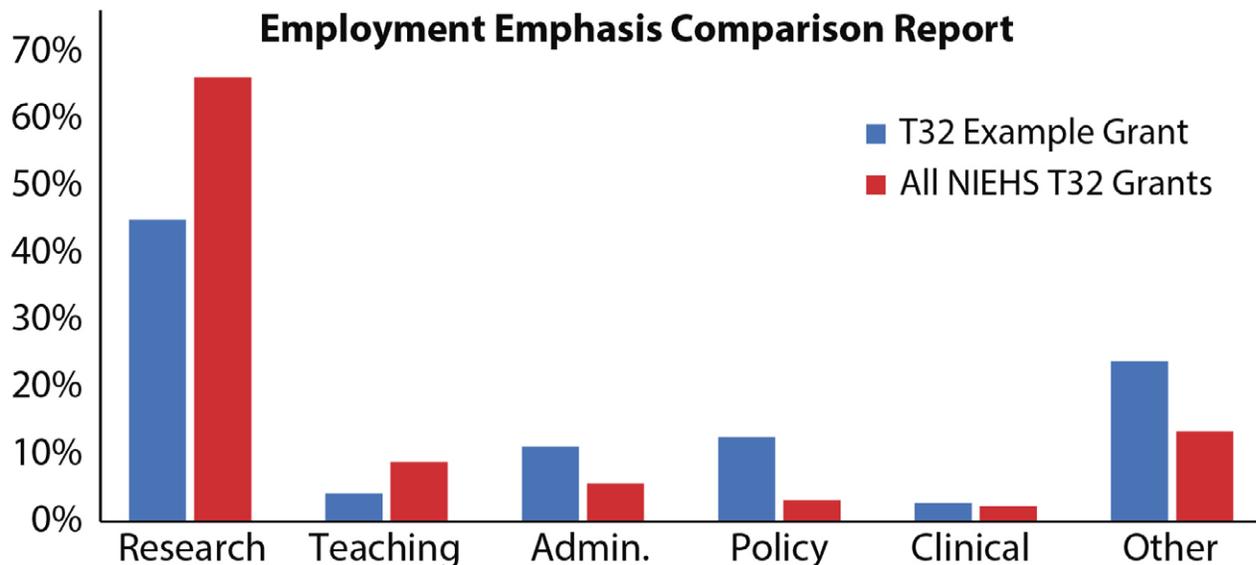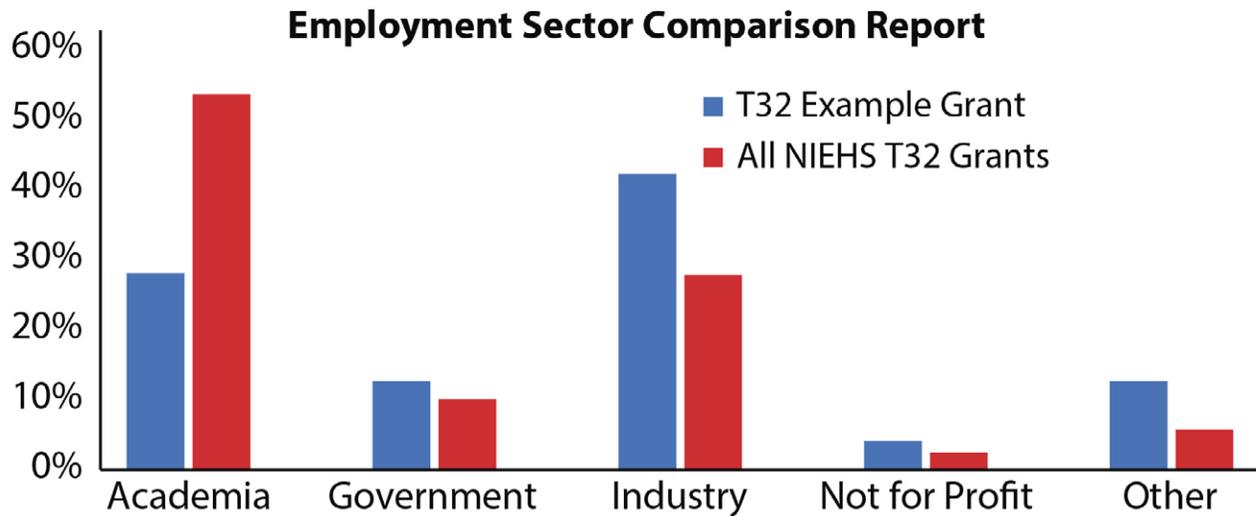
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CareerTrac Data on Display

CareerTrac generates many reports so that NIEHS T32-funded researchers can see data on their trainees and compare them to the aggregate of all NIEHS T32 trainees with data in CareerTrac.

Comparison Reports

CareerTrac generates reports that compare the employment sector and emphasis between one grant and all NIEHS T32 grants.

Employment Sector Comparison Report

■ T32 Example Grant
■ All NIEHS T32 Grants

Employment Emphasis Comparison Report

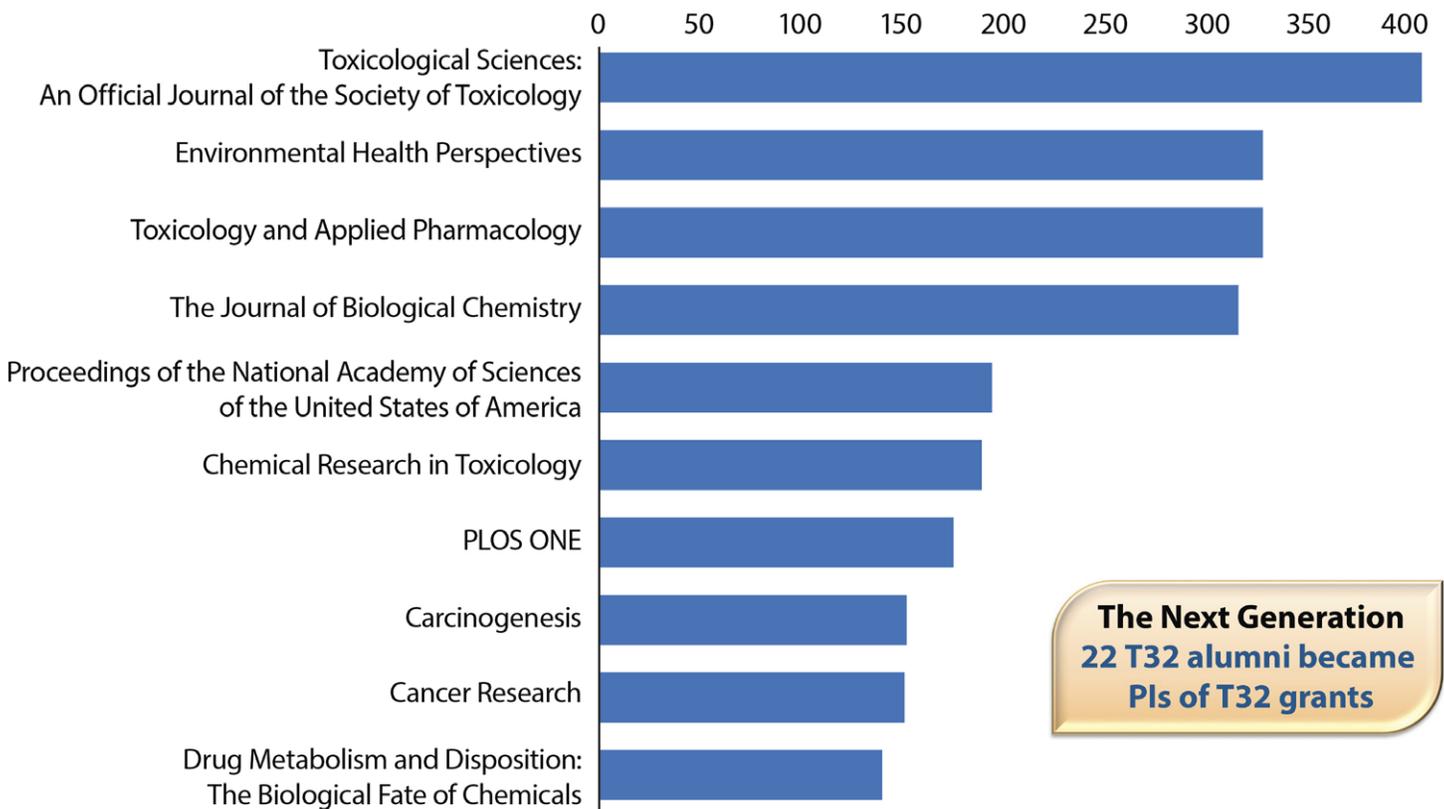■ T32 Example Grant
■ All NIEHS T32 Grants
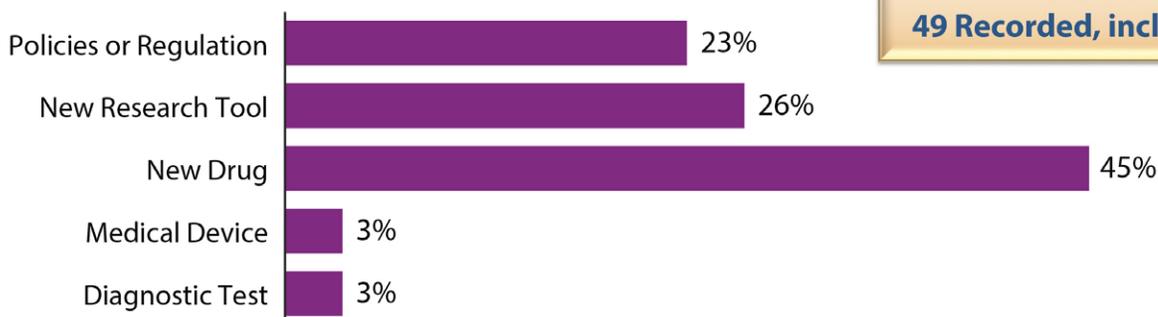
CareerTrac Data on Display

Publications

- 11,420: Total number of trainee publications in CareerTrac
- 1.77: Average number of publications per trainee

Number of Publications in the 10 Journals Most Published in by T32 Trainees

The Next Generation
22 T32 alumni became PIs of T32 grants

Types of Products or Policies Recorded for Trainees

Policies or Regulation	23%
New Research Tool	26%
New Drug	45%
Medical Device	3%
Diagnostic Test	3%

Products and Policies
49 Recorded, including 25 patents

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CareerTrac Data Collection

The CareerTrac database allows for the measurement of long-term trainee outcomes by collecting data on a variety of measures. The data is used by NIEHS grantees in reports and renewals, and to track their trainees over time, and by NIEHS to track trends in trainees' fields of training, employment, publications, and more.

CareerTrac collects the data in the following fields:

- Research Project Title
- Field of Training (NIH-defined)
- Scientific and Technical Emphasis (NIEHS-defined)
- Career Highlight (narrative)
- Posters
- Honors
- Publications
- Later NIH Grants
- Students
- Policies and Products

- Employment Data
  - Position Title
  - Organization
  - Sector
    - Academia, Government, Industry, Not for Profit, Other
  - Major Emphasis
    - Administration, Clinical, Policy, Research, Teaching, Other
  - Tenure Track
  - Postdoc

> *"CareerTrac has been an effective tool to understand the past, present, and future of our training programs. We know more about where our trainees come from, their work during training, and where they go after they leave our programs. We see the value in long-term outcome data. It helps us think about how to further shape and improve our training programs. We very much appreciate the data PIs enter in CareerTrac and encourage updating it regularly."*
>
> Gwen Collman, Director, Division of Extramural Research and Training

This report provides an overview of the many accomplishments of the NIEHS NRSA T32 program for the past 15 years. Unless otherwise stated, figures represent data from 2001 to 2015.

We look forward to your comments and feedback. For more information, contact Carol Shreffler, Ph.D., at shreffl1@niehs.nih.gov or 984-287-3322

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